

Quarterly CTC Archive Status Report: Final Report

William E. Walsh

BDM Federal, Inc.

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13. ABSTRACT (Maximum 200 words) The purpose of this report is to provide a status of tasks performed and data received during the period 15 January through 15 April 1994. This status report will cover both the physical data sources and the digitized databases. This report will also include an Archive Project Summary, the Priorities of Work 16 April through 30 September 1994, and a listing of Areas of Concern that impact upon Archive operations and CTC data analysis. The Final Archive Status Report for Delivery Order 9 contains the status of Archive activities and holdings through 11 January 1994. The CTC Archive provides an invaluable resource for military analysts to systematically identify, prioritize and resolve Army warfighting issues. The wealth of material in the CTC Archive allows Subject Matter Experts (SMEs) to research CTC warfighting to help define the scope of issues and to help develop solutions for the issues. Several Archive related areas of concern currently exist that may have pronounced effects upon the Archive and reduce its effectiveness as a resource for CTC data analysis.				
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**QUARTERLY CTC ARCHIVE STATUS REPORT
(FINAL)**

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U. S. Army Research Institute

June 16, 1994

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(FINAL)**

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QUARTERLY CTC ARCHIVE STATUS REPORT (FINAL)

I. Background

Army Regulation 11-33 states, "The DCSPER will ensure that the Army Research Institute (ARI) develops a training data archive of all unit performance data derived from training conducted at the combat training centers." The Presidio of Monterey Field Unit of ARI (ARI-POM) has been assigned the responsibility of operating and maintaining the Combat Training Center (CTC) Archive. The CTC Archive currently maintains operational databases for the National Training Center (NTC), the Joint Readiness Training Center (JRTC), and the Combat Maneuver Training Center (CMTC). In addition, Battle Command Training Program (BCTP) data will be incorporated into the CTC Archive in the near future.

Active, Reserve, and National Guard units deploy to the training centers periodically to train in the most realistic conditions short of actual combat. Following each training cycle or rotation, data concerning the training units and their missions are sent to ARI-POM for inclusion into the Archive databases.

The Archive data are available to analysts and researchers from the Department of Defense for identifying and analyzing issues related to Doctrine, Organization, Training, Materiel, Leadership and Soldiers (DOTMLS). In addition, ARI and the Center for Army Lessons Learned (CALL) utilize the Archive and the Analysis Facility to conduct CTC Data Analysis Certification Workshops for Department of Defense Agencies, TRADOC schools and integrating centers. These agencies, schools, and centers use the data to analyze performance trends and to evaluate specific DOTMLS issues.

II. Objective

The primary purpose of this report is to provide a status of tasks performed and data received during the period 15 January through 15 April 1994. This status report will cover both the physical data sources and the digitized databases. In addition, this report will include an Archive Project Summary, the Priorities of Work for the period 16 April through 30 September 1994, and a listing of Areas of Concern that impact upon Archive operations and CTC data analysis. The Final Archive Status Report for Delivery Order 9 contains the status of Archive activities and holdings through 11 January 1994.

III. Project Summary

The Archive project provides for the continuing operation, maintenance and support of the Archive Facility, the physical data materials, and the digital databases. The scope of the Archive effort includes three major areas:

- Management of the CTC Archive Data Materials
- Provision of ADP support for the Archive databases
- Assistance with CTC Archive and Research Center Course (Workshop)

A. Management of the CTC Archive Data Materials. The management of the CTC Archive data materials involves processing the physical materials (documents, tapes, etc) that arrive from the CTCs so that they are properly maintained for ready access. It also involves extracting information from these physical items and entering that information into various electronic databases.

B. Provision of ADP Support for the Archive Databases. Data arrives from the CTCs in a variety of formats. There is a need to provide specialized programming services to facilitate the extraction of data from the original sources and the entry of this data into the databases that will be used by researchers. ADP support also includes the installation and maintenance of hardware and commercial off-the-shelf software that enable analysts to access and manipulate the data. The Archive hardware and software provide for a local area network (LAN) and remote access to the databases.

C. Maintenance and conduct of CTC Archive and Research Center Training Course. ARI-POM conducts the CTC Archive and Research Center Course for CAC. There are two versions of this course. One version is conducted quarterly at the Presidio of Monterey (POM). The other version is a remote course which is conducted at sites that have a remote Combat Analyst Workstation (CAW). The Contractor will assist the ARI staff with the maintenance and conduct of the course. Assistance will include the following:

1. Revising the training modules for the on-site and remote versions of the course quarterly to reflect modifications to the existing procedures for the Combat Analyst Workstation.
2. Acting, with ARI staff, as facilitators during the quarterly on-site course.

3. Consulting with course members during the on-site course about the design and scope of their individual research projects.

IV. Archive Status Report, January through April 1994

The Archive Status Report provides a status of the tasks performed and the data received during the period 15 January through 15 April 1994. This status "snapshot" covers both the physical data sources and the digitized databases. The status report begins with a list and general description of the data sources held in the Archive. Following the list of data sources is a listing of the Archive databases. This Archive Status Report culminates with a detailed status of the Archive data sources and databases for the period 15 January through 15 April 1994.

ARCHIVE DATA SOURCES

After Action Review (AAR) videocassettes
Communications tapes
Digital Data
Film
Graphics
Orders/Plans
Scenario Documents
Take Home Package (THP)
Other Supporting Documents

AAR videocassettes, received from all CTCs, document After Action Reviews at all echelons including Division (limited), Brigade, Battalion, Company, and Platoon. These tapes are currently sent to the Archive in 1/2 inch, VHS format only, though the Archive does hold 3/4 inch AAR videocassettes for NTC rotations prior to 92-04.

Communications audio tapes are received from CMTC and NTC only. These are one inch, open reel, 40-track tapes containing radio communications among the player units during a given time period.

Digital Data includes any and all digital files received by the Archive. These include: NTC instrumented data tapes, NTC and JRTC diskette version of their THPs, and JRTC training and evaluation outline (T&EO) diskettes and video listings. Other digital information exists, such as AAR tape inventory lists and early NTC orders and plans, but these are not used for database creation.

Film, 35mm slides specifically, is occasionally received from CMTC only. These slides usually document camouflage of personnel or equipment, safety violations, etc. at the CTCs and are not currently used in database products.

Graphics include battlefield graphics created and employed by player units. Also included are

a number of instrumented graphics. These are received from all CTCs, though JRTC does not often send the large, acetate overlays. CMTC sends a reduced paper version (included with the THP) along with full-size acetate graphics.

Orders and Plans are held for all CTCs, for both BLUEFOR and OPFOR player units, when furnished. Corps, Brigade, and Battalion/TF level operations orders and plans are held for all CTCs. CMTC sends Orders and Plans as part of an integrated THP. NTC and JRTC Orders and Plans are held in the Archive with other rotational paper data.

Scenario documents are those defining the notional enemy, the Civil Affairs situation, etc. These are received for every rotation, even in cases where the document remains unchanged over a series of rotations. Such supportive documents are received from all CTCs, JRTC sending much more than either NTC or CMTC.

THP is the narrative summary of unit performance by BOS, echelon, and mission. In addition, it contains some Battle Damage Assessment data broken down by mission, and subelement. The CTC Archive receives a copy of this document for each rotation and from each CTC. Diskette versions are received from JRTC and NTC (see Digital Data above).

Other Supporting Documentation may include Signal Operating Instructions (SOIs) for use with Communications tapes, Staff Duty Journals/Logs, and Artillery firing data documents, to name a few. Some of these document types are sent to the Archive from each of the CTCs. More often, such documents are unique to the issuing CTC. Even in cases where the information is similar, its presentation and format are often unique to the CTC that sent it.

V. ARCHIVE DATABASES

Data sources are used in the building of Archive databases. These databases facilitate remote and local access and manipulation of CTC training data for the benefit of researchers and analysts. The data processing necessary to fill databases requires an intensive and extensive reworking of data sources, both through the hands of subject matter experts (SMEs) and data entry personnel and by computerized processes. The databases, accessible through the Combat Analyst Workstation both on and off site, include:

- Automated Finder's Guide (AFG)
- Mission Database
- Mission Replay and Battle Trace
- Mission Critical Event Sheets (MCES)
- Mission Training Plan (MTP) Database
- Take Home Package (THP) Database
- Battle Damage Assessment (BDA) Database
- Graphics Database

AFG is central to the family of Archive databases. AFG, resident on the VAX, allows researchers to select missions of interest based on a variety of criteria. Once a mission has been selected, data sources specific to that mission (and housed in the Archive for examination by researchers) will be listed in AFG. Basic mission information -- mission statement, BDA, and the like -- is also available in AFG.

Mission Databases reside on the VAX and provide player position location, player status, and firing data for each NTC mission for which readable digital data files are received.

Mission Replay files, stored on UNIX servers, allow the analyst to replay selected NTC missions in two different modes: Battle Trace (TBAT) and Performance Analysis Replay Tool (PART). TBAT allows the analyst to quickly review mission battle-flow with terrain features. PART provide a fixed-scale, high-resolution replay with terrain, choice of displayed vehicles, and displays player attrition, engagements, and indirect fire missions.

MTP database, resident on the VAX, is composed of T&EO documentation files and Unit Performance Data files (UPD) from JRTC, to which the database is specific. Both sets of files are necessary for MTP database creation. It is useful in accessing JRTC T&EOs over many rotations.

MCES provide basic information, such as Mission Statements and Terrain, and display graphically the Battle Flow of Events as a time-line. Currently, these files are made available in hard-copy. To create an MCE sheet, data entry personnel and subject matter experts identify critical events in the THP, AAR, and unit operations order for a given mission.

THP database files support automated access to NTC and JRTC THP textual data. The database expedites text selection by CTC, rotation, organization type, BOS, and specific section. It also includes the ability to search a word or phrase within a file.

BDA database files hold CTC battle statistics on a mission by mission basis. The database is useful in searching battle statistics over many rotations, and allows for flexible manipulation and importation into spreadsheets or Xbase software applications.

Graphics Database files consist of imaged battlefield graphics. The original images are reduced (when necessary), scanned, and converted before being uploaded to the UNIX server where they reside. Graphics files may be viewed and manipulated through the WinGIF shareware application found on the Combat Analyst Workstation. WinGif also allows for easy conversion of graphics files into a WordPerfect compatible file format. A researcher may then quite easily complement his report with battlefield graphics.

VI. STATUS OF ARCHIVE DATA SOURCES AND DATABASES

Status of Archive Data Sources, January through April 1994

A. After Action Review Videocassettes

NTC 94-03, 94-04, 94-05

B. Communications Audio Tapes

NTC 94-01, 94-03, 94-04

JRTC does not send communications tapes to the Archive.

C. Digital Data:

NTC sends instrumented data and Take Home Package files to the CTC Archive: 91-10, 91-11, 94-02, 94-03, 94-04, 94-05, 94-06

CMTC does not send digital files to the CTC Archive.

JRTC digital files consist of THP, T&EO documentation files and Unit Performance Data (UPD), BDA, and I-MILES data (for early rotations only).

THP 94-01

T&EO documentation files 91-09, 92-02, 92-05, 93-01, 93-05, 93-06, 93-08, 94-02

T&EO UPD files 91-09, 92-02, 92-05, 93-01, 93-05, 93-06, 93-08, 94-02

BDA 94-02

D. Film

Film in the form of slides (35mm transparencies) is held at the Archive in limited quantities.

NTC does not send film to the Archive.

JRTC does not send film to the Archive.

E. Graphics

Graphics are held at the Archive for all CTCs, CMTC and NTC providing the bulk of the graphics. Note that a number of other graphics may or may not be available for rotations listed below.

NTC 94-04, 94-05, 94-06

JRTC 93-08, 94-01, 94-02, 94-03

F. Orders and Plans

Records indicate receipt of orders and plans by rotation -- not mission. No mention of quality is noted for these items. Therefore, receipt of a rotation's worth of orders in no way determines availability of orders and plans for use in the graphics database or for use in mission-based research.

NTC 94-04, 94-05, 94-06

JRTC 92-09, 93-08, 94-01, 94-02, 94-03

G. Scenario

Scenario development documents are those paper data defining the notional situation (civilian, geographic, political issues and the like) of the rotation on a macro level. These are in large part supplied by the host CTC.

NTC sends scenario documents only sporadically. For purposes of reporting, the Archive does not hold scenario control documents from NTC.

CMTC sends few if any scenario documents. For purposes of reporting, the Archive does not receive scenario control documents from CMTC.

JRTC sends the bulk of scenario control documents, often well in advance of a rotation's completion. Much of this information exactly duplicates scenario documents from the previous rotation(s).

93-08, 94-01 through 94-09

H. THPs

THPs are held for all CTCs, although the content and format vary greatly by CTC and by fiscal year within each CTC.

NTC 94-02, 94-03, 94-04, 94-05

JRTC 94-02

I. Other Supporting Documentation

All CTCs send a variety of documents to the Archive that do not meet the definition of orders or scenario control documents. These may include administrative documents like rotation/mission schedules, or they may include operational documents such as SOIs. These often prove useful to archive staff and researchers. An exhaustive record is not available, thus no rotation based account can be effectively provided here.

VII. Status of Databases

AFG status is presented by percentage of completion in phases. Each phase is explained below.

The first phase (1) of AFG data entry is the Mission Summary phase. This includes the identification, verification, and data entry of units and their missions. Also, building of master tables in AFG is essential to this phase, as it makes mission summary information accessible to the researcher. The actual names of tables/forms that comprise the first phase include: rotation, mission, mission sequence (AKA, mission database building work sheets, NTC only), and master tables.

The second phase (2) is composed of the Mission Statement and BDA. The Mission Statement requires that text files be created from converted digital THP files or entered manually from other sources. Text files include: mission statement, commander's intent, and task organization (starting with FY93 rotations). BDA information is also written to a text file (or entered manually for JRTC and CMTC) and sent to the VAX for each mission of any given rotation.

Phase three (3) requires entries into the AFG catalog tables. This includes the AAR videocassette table, communications tapes table, and the resource table (provides an index of paper and digital information sources available). Data entry is also required for the JRTC weather and light data during this phase. The database table is the last table to be completed. Data entered here provides a list of all other databases available to the researcher: i.e., the THP, BDA, Graphics databases, etc., which contain information specific to the mission in question.

Phase four (4) pertains to NTC only and includes evaluation and data entry of the performance index for each force-on-force mission. A performance index is derived from terrain retention/capture and/or casualty exchange data.

Statistic of AFG fill are given on the following pages.

NTC Automated Finders Guide
Status Tables
April 15, 1994

Rotation	Phase 1 (Basic Mission Summary Info)	Phase 2 (Advanced Mission Summary Info)	Phase 3 (Mission Text Files)	Phase 4 (Mission Catalog Info)	Overall Percentage of Completion
90-01	100%	94%	94%	100%	97.00%
90-02	100%	100%	74%	100%	93.50%
90-03	100%	100%	56%	100%	89.00%
90-04	100%	100%	50%	100%	87.50%
90-05	92%	100%	31%	67%	72.50%
90-06	98%	100%	65%	100%	90.75%
90-07	100%	100%	66%	57%	80.75%
90-08	100%	100%	56%	25%	70.25%
90-09	92%	50%	66%	16%	56.00%
90-10	100%	100%	67%	53%	80.00%
90-11	100%	50%	69%	63%	70.50%
90-13	100%	86%	72%	60%	79.50%
91-02	100%	79%	69%	85%	83.25%
*91-05	100%	13%	49%	17%	44.75%
**91-06	100%	16%	48%	16%	45.00%
***91-07	0%	0%	0%	0%	%0.00
****91-08	100%	0%	50%	40%	47.50%
91-10	100%	63%	71%	50%	71.00%
91-11	0%	0%	0%	0%	0.00
91-12	100%	86%	50%	43%	69.75%
92-01	100%	72%	98%	67%	84.25%
92-02	81%	91%	70%	12%	63.50%
92-03	97%	88%	68%	12%	66.25%
92-04	82%	50%	75%	43%	62.50%
92-05	80%	87%	75%	71%	78.25%
92-06	96%	87%	70%	10%	65.75%
92-07	94%	100%	59%	33%	71.50%
92-08	100%	91%	68%	79%	84.50%
92-09	92%	71%	93%	64%	80.00%
92-10	84%	62%	63%	64%	68.25%

NTC Automated Finders Guide
Status Tables
April 15, 1994

Rotation	Phase 1 (Basic Mission Summary Info)	Phase 2 (Advanced Mission Summary Info)	Phase 3 (Mission Text Files)	Phase 4 (Mission Catalog Info)	Overall Percentage of Completion
90-01	100%	94%	94%	100%	97.00%
92-11	92%	74%	92%	64%	80.50%
92-12	92%	70%	89%	66%	79.25%
93-01	100%	76%	25%	23%	56.00%
93-02	92%	65%	25%	6%	47.00%
93-03	92%	70%	70%	57%	72.25%
93-04	94%	63%	100%	62%	79.75%
93-05	92%	80%	87%	49%	77.00%
93-06	100%	76%	100%	66%	85.50%
93-07	92%	80%	95%	58%	81.25%
93-08	92%	27%	25%	67%	52.75%
93-09	100%	50%	23%	70%	60.75%
93-10	100%	57%	100%	54%	77.75%
93-11	92%	54%	23%	57%	56.50%
93-12	100%	44%	25%	50%	54.75%
94-01	100%	62%	100%	100%	90.50%
94-02	100%	0%	0%	0%	25.00%
94-03	0%	0%	0%	0%	0.00%
94-04	0%	0%	0%	0%	0.00%
94-05	100%	44%	82%	100%	81.50%
94-06	0%	0%	0%	0%	0.00%

CMTC Automated Finders Guide
Status Table
April 15, 1994

Rotation	Phase 1 (Basic Mission Summary Info)	Phase 2 (Advanced Mission Summary Info)	Phase 3 (Mission Text Files)	Phase 4 (Mission Catalog Information)	Overall Percentage of Completion
90-01	100%	85%	75%	94%	89%
90-02	100%	92%	75%	100%	92%
90-03	100%	100%	50%	100%	88%
90-04	100%	100%	75%	90%	91%
90-05	100%	100%	73%	100%	93%
90-06	100%	100%	72%	100%	93%
90-07	100%	100%	75%	100%	94%
90-08	100%	97%	74%	100%	93%
90-09	100%	100%	72%	100%	93%
90-10	100%	100%	75%	100%	94%
90-11	100%	100%	73%	100%	93%
90-12	100%	100%	75%	100%	94%
91-01	100%	96%	50%	100%	87%
91-02	100%	100%	46%	100%	87%
91-03	100%	97%	42%	73%	78%
91-04	100%	100%	48%	100%	87%
91-05	100%	100%	50%	100%	88%
91-06	100%	89%	50%	100%	85%
91-07	100%	100%	44%	89%	83%
91-08	100%	88%	50%	100%	85%
91-09	100%	93%	25%	100%	80%
91-10	100%	100%	25%	100%	81%
92-01	100%	93%	14%	43%	63%
*92-02	0%	0%	0%	0%	0%
92-03	100%	100%	0%	100%	75%
92-04	100%	63%	0%	25%	47%
92-05	100%	100%	25%	58%	71%
92-06	100%	75%	19%	85%	70%
92-08	75%	95%	100%	25%	74%
92-09	75%	100%	100%	0%	69%
92-10	75%	58%	100%	0%	58%

CMTC Automated Finders Guide
Status Table
April 15, 1994

Rotation	Phase 1 (Basic Mission Summary Info)	Phase 2 (Advanced Mission Summary Info)	Phase 3 (Mission Text Files)	Phase 4 (Mission Catalog Information)	Overall Percentage of Completion
92-11	100%	50%	100%	0%	63%
92-12	100%	100%	100%	0%	75%
92-13	100%	100%	85%	11%	74%
93-01	100%	50%	100%	0%	63%
93-02	100%	50%	75%	25%	63%
93-03	100%	88%	100%	25%	78%
93-04	100%	90%	90%	25%	76%
93-05	100%	93%	100%	21%	79%
93-12	0%	0%	0%	0%	0%

JRTC Automated Finders Guide
Status Table
April 15, 1994

Rotation	Phase 1 (Mission Summary Information)	Phase 2 (Mission Text Files)	Phase 3 (Mission Catalog Information)	Overall Percentage of Completion
90-01	100%	100%	50%	83%
90-02	100%	100%	50%	83%
90-03	100%	100%	50%	83%
90-04	100%	100%	50%	83%
90-05	100%	100%	50%	83%
90-06	100%	100%	50%	83%
90-07	100%	88%	50%	79%
90-08	100%	100%	50%	83%
91-01	100%	67%	50%	72%
91-02	100%	100%	50%	83%
91-03	100%	100%	25%	75%
91-04	100%	100%	25%	75%
91-05	100%	100%	25%	75%
91-06	100%	100%	25%	75%
91-07	100%	88%	25%	71%
91-08	100%	84%	0%	61%
91-09	100%	67%	25%	64%
92-01	100%	92%	25%	72%
92-02	100%	100%	25%	75%
92-03	100%	100%	25%	75%
92-04	100%	100%	50%	83%
92-05	100%	100%	45%	82%
92-06	100%	84%	0%	61%
92-07	100%	75%	0%	58%
92-08	100%	100%	0%	67%
92-09	100%	67%	0%	56%
93-02	100%	87%	0%	62%
93-03	100%	58%	0%	53%
93-04	96%	59%	0%	52%
93-05	100%	0%	0%	33%

JRTC Automated Finders Guide
Status Table
April 15, 1994

Rotation	Phase 1 (Mission Summary Information)	Phase 2 (Mission Text Files)	Phase 3 (Mission Catalog Information)	Overall Percentage of Completion
93-06	100%	0%	0%	33%
93-07	100%	0%	0%	33%
93-08	0%	0%	0%	0%
94-01	0%	0%	0%	0%
94-02	0%	0%	0%	0%
94-03	0%	0%	0%	0%
94-04	0%	0%	0%	0%

A. Mission Database:

NTC 92-02, 92-04, 92-05, 94-01, 94-02, 94-05

CMTC does not have mission databases due to lack of compliant data files.

JRTC does not have mission databases due to lack of compliant data files.

B. Mission Replay and Battle Trace

Mission Replay and Battle Trace apply to NTC only, as they are produced from Mission Database information.

NTC Mission Replays/Battle Traces are available for earlier rotations in addition to those listed below, though listing files prior to 90-01 is outside the scope of work for this contract. 92-02, 92-04, 92-05, 94-01, 94-02, 94-05

C. Mission Critical Event Sheets

(MCES) may be created for all CTC missions, providing data is available. Mission Critical Event information is not gathered for Live Fire missions.

D. THP Database:

Only NTC and JRTC send readable files to the Archive.

NTC 94-01, 94-02, 94-05

CMTC does not provide digital files of THPs.

JRTC 94-01

E. MTP database:

This database is exclusive to JRTC.

JRTC 91-09, 92-02, 92-03, 92-04, 92-05, 93-01, 93-05, 93-06, 93-08, 94-01, 94-02

F. BDA database:

NTC 94-01, 94-02, 94-05

JRTC 94-01, 94-02

G. Graphics Database:

NTC: 94-01, 94-02, 94-05

JRTC: 94-01, 94-02

This concludes the Archive Status Report, April 1994. For more detailed information regarding data sources or databases, please refer to the CTC Archive Data Catalog. For specific AFG information, use AFG to perform searches or refer to the AFG Catalog.

VIII. Priorities of Work, April through September 1994

In order to optimize the time and Archive human resources available while accomplishing customer requirements we have developed a list of priorities for the Archive. The priorities of work for the period April through September 94 include:

- Support analysis of NTC Rotation 94-07 and baseline NTC Rotations 94-05, 94-06 and 94-08 data that are stored in the Archive
- Priority of effort through June is the loading of all data received, priority of Archive effort will shift in July to the documentation of existing software, CIS data reduction processes, and archive operating procedures
- Develop a comprehensive Work Plan for the Archive Delivery Order, April through September 1994
- Ensure that all database building and data entry deliverables are accomplished
- Develop the Archive Operating Procedures Manual
- Redesign and rewrite VAX AFG software in FoxPro for the Novell Network
- Battle Replay - implement control measures and the ability to run the FoxPro mission databases on the Novell Network

IX. Areas of Concern

The CTC Archive provides an invaluable resource for military analysts to systematically identify, prioritize and resolve Army warfighting issues. The wealth of material in the CTC Archive allows Subject Matter Experts (SMEs) to research CTC warfighting to help define the scope of issues, and, more importantly, to help develop solutions for the issues. However, several Archive related areas of concern currently exist that may have pronounced effects upon the Archive and reduce its effectiveness as a resource for CTC data analysis. This section identifies several areas of concern within the Archive and describes the potential impact of these concerns upon Archive capabilities.

Area of Concern: The CTC Archive has not received After Action Review Videocassettes from the JRTC in over a year. The last rotation that we received videocassettes for was 93-03. We have notified the CALL representative at the JRTC, SFC Blue-Fox, about this shortcoming.

Comments: The AAR videocassettes contain invaluable SME assessment feedback to the members of player units from the platoon level through brigade covering all BOS related activities. The AAR data source enhances the military analyst's ability to better interpret statistical data from battles and OC written comments contained in the THP. The lack of comments from the AAR tapes reduces the researcher's ability to set an accurate context for battle decisions, actions and results of JRTC operations.

Area of Concern: CMTC does not send communications tapes to the CTC Archive.

Comments: In response to an inquiry from the Commander, CALL-LVN at an IPR on 20 October 1993, ARI reopened the issue of archiving commo tapes from CMTC, and explored alternatives for accomplishing same. While CALL/OD expressed a willingness to provide copies of the tapes for the Archive, discussions revealed a number of factors bearing directly on the feasibility of accomplishment as well as the payoff of this:

- first, there would be problems in duplicating the tapes: CALL/OD does not have the capabilities to duplicate the tapes, though the Vipers do; the Vipers, pressed to process the 500-600 commo tapes per rotation, could not duplicate them during or right after the rotation, but may be able to provide them some thirty or sixty days later;
- second, the process will be expensive, since the tapes themselves cost in the neighborhood of \$9.00 each, and there may be a labor charge on top of that for providing a service unspecified in the support contract;
- third, until the Archive receives it's CMTC Home Station Work Station (HSWS), the tapes, which are recorded digitally on VHS cassettes, will be useless because they can be played only on the HSWS, and according to CALL/OD, their contents cannot be transposed to audio tapes for playback on conventional audio tape machines;

- fourth, many of the tapes are blank, or have little traffic on them, since the tapes are run for 24 hours continuously during the conduct of the exercise.

Acknowledging that a materials-only cost of \$4,500 - \$5,400 per rotation for commo tapes, many of which are of limited, if any, value, is excessive, ARI and CALL/OD agreed to explore possibilities for identifying which tapes in particular (identified by net and scenario phase) might offer sufficient payoff to warrant selective archiving. CALL/OD agreed to FAX ARI a list of nets that are monitored/recorded. ARI will explore with CALL-LVN which nets to retain in the Archive.

Area of Concern: The NTC has occasionally failed to notify ARI-POM about format revisions and version updates to the NTC instrumented data.

Comments: This is an issue that will require contract modifications. Pat Whitmarsh, ARI, and Mike Korandovitch, the COR at NTC, are working on this issue. CTIES and STRICOM are involved in this issue. ARI-POM must receive the data format changes and version updates in order to keep the database loading software current. The mission databases and battle replays cannot be properly maintained without current database loading software.

Area of Concern: The CMTC does not send instrumented data or digital THP data files to the CTC Archive and the JRTC does not send instrumented data to the Archive.

Comments: During FY 94 CMTC and JRTC will start sending instrumented data to the CTC Archive for processing. In order for ARI-POM to be able to process the automated data that will be collected at CMTC and JRTC it is imperative that the data be sent with adequate documentation detailing the contents and format of the data streams. Once the data and documentation are received, software will be developed at ARI-POM that will make the data available to analysts in a relational database format. The Archive currently holds only the hard copy versions of THPs from the CMTC. This situation prevents the automated review of THPs from the CMTC and eliminates a researchers ability to access remotely battle statistics and OC mission feedback data that are contained in the THPs.

Area of Concern: The CMTC and the JRTC have not sent graphical and ancillary paper data to the CTC Archive since 93-02 and 93-04 respectively.

Comments: The lack of battle graphics and orders inhibits a researcher's ability to establish a meaningful battle context to support valid analysis of decisions, actions and results. The CALL/OD from the CMTC reported to Archivist and Archive Task Leader that they were unaware that the Archive needed OPORDs, FRAGOs, Warning Orders, Overlays, and T&EOs. The CALL/OD will direct the appropriate data sources at the CMTC to provide the CTC Archive with copies of these documents for each rotation. The Archive will not receive the data materials from past rotations, but will begin to receive these data materials again starting in Dec 93 or Jan 94. SFC Blue-Fox, the CALL representative at JRTC, is attempting to forward to the Archive the missing graphics and orders, if available, from past rotations at the JRTC. He will ensure that this data requirement will be met for future rotations. The types of data that are to be scanned into the graphics database for all CTCs will include: the Task Force Operations Orders, the Task Force Execution Matrices, and the Task Force Operations Overlays.

Area of Concern: A large backlog of Mission Critical Events (MCE) data exists across all CTCs. An automated tool to view the Mission Critical Events is currently being developed and will be incorporated into the Archive during FY 94.

Comments: The backlog of MCE data exists because of the low priority assigned to the MCE database during the last contract year. In order to obtain the MCE data for a given mission, data entry personnel and military Subject Matter Experts (SMEs) must perform an extensive search of the THP, AAR and unit operations orders. The human resources cost of such an effort was beyond the capability of the Archive staff during the last contract year. The integration of the automated tool to create and view MCE data will require extensive coordination and documentation in order to become a viable database within the Archive.

Area of Concern: The procedure for updating the MTP Database requires the assistance of personnel that are not assigned directly to the Archive staff. Rotation 93-04 was the last one entered into MTP database.

Comments: In order to maintain the MTP Database properly the Archive staff must become self-sufficient in terms of loading this database.

Area of Concern: The NTC has modified the format that will be used to report BDA data to the CTC Archive effective with rotation 94-04.

Comments: Modifications to the existing BDA Database structure at ARI-POM will be necessary to accommodate the new NTC format. The entire listing of weapons and targets should be reviewed when the new NTC format is incorporated into the BDA Database.

Area of Concern: Rotations 93-06 to 94-02 at the CMTC involved Peace Keeping Operations (PKO) and Operations Other Than War (OOTW) with data elements that differ significantly from warfighting data. As an example, the BDA categories contained in the PKO data sources do not exist in the current BDA Database at ARI-POM. The JRTC is starting to conduct PKOs and OOTWs.

Comments: The Archive staff has not entered any digital PKO data or OOTW data into the CTC Archive databases to date because of the unique nature of PKO and OOTW exercises. In addition, some of the data derived from PKO and OOTW exercises is not compatible with the structure of the existing CTC Archive databases that were developed to accommodate warfighting data. The processing of digital PKO and OOTW data is a priority issue for FY 94 and it must be resolved as soon as possible. The contractor will discuss with ARI the possible options for processing PKO and OOTW data.

Area of Concern: The CTC Archive contains training data in the form of paper, acetate graphic overlays, magnetic voice recordings and computer digital data that are available to local and remote analysts. Personal computers are utilized to access the available digital data over the Ethernet Local Area Network (LAN). As increasing amounts of paper, graphics and computer digital data are stored and made accessible via the LAN, the available storage medium, hard disk drive, becomes less.

Comments: Recently, the contractor converted the ARI application LAN from 3COM to Novell operating system software. In order to facilitate better Archive data access to LAN and remote users, it has been requested that data stored on the UNIX and VMS computer systems be converted and placed on the Novell LAN. In order to convert and provide better data access single type of LAN it will be necessary to provide increased storage space in the form of CD-ROM or large hard disk drives of the servers.

Area of Concern: Several important software updates, modifications and conversions will be accomplished early in 1994. The software systems affected by these changes include: the Automated Finder's Guide, the Graphics Database, the Battle Replay Tool and the Automated THP Viewer.

Comments: These software changes are necessary because of the implementation of the Novell Network and the Archive requirement to support the analysis of NTC rotation 94-07 data.